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Angler Catch and Fishing Effort Data from the 1983 and 1984 Angler Diary Pilot Study at Plummer's Great Slave Lake Lodge, N.W.T.

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ABSTRACT

Thompson, P.C., L.E. Anderson, and H.R. Ellison. 1988. Angler catch and fishing effort data from the 1983 and 1984 angler diary pilot study at Plummer's Great Slave Lake Lodge, N.W.T. Can. Data Rep. Fish. Aquat. Sci. 710: iv + 12 p.

Data are presented from a two year pilot study designed to test an angler diary program as an alternative to the standard creel census method of collecting angler fishing effort and catch data and to determine its cost effectiveness. Angler response rates were 63% in 1983 and 59% in 1984. Respondents reported a total of 6 321 hours of fishing effort in 1983 and 6 375 hours in 1984. The 1983 respondents caught a total of 4 193 fish while in 1984, 4 740 fish were caught by respondents. Average catch per angler hour was 0.65 fish in 1983 and 0.72 fish in 1984.

All guests at the lodge are estimated to have spent 11 755 hours fishing in 1983 and 13 926 hours fishing in 1984. An estimated 7 798 fish were caught in 1983 and 10 355 fish were caught in 1984.

Key words: angler diary; angling; catch/effort; sport fishing; sport fishing statistics.

RÉSUMÉ

Thompson, P.C., L.E. Anderson, and H.R. Ellison. 1988. Angler catch and fishing effort data from the 1983 and 1984 angler diary pilot study at Plummer's Great Slave Lake Lodge, N.W.T. Can. Data Rep. Fish. Aquat. Sci. 710: iv + 12 p.

On présente les données d'une étude pilote d'une durée de deux ans visant à déterminer si le carnet du pêcheur pourrait constituer une solution de rechange aux relevés standard de pêche sportive pour la collecte de données sur les captures et l'effort de pêche et à déterminer la rentabilité de cette mesure. Le taux de réponse des pêcheurs a été de 63% en 1983 et de 59% en 1984. Les carnets révèlent un effort de pêche total de 6 321 heures en 1983 et de 6 375 heures en 1984, et des captures totales de 4 193 poissons en 1983 et de 4 740 poissons en 1984. Le taux de capture moyen par heure de pêche a été de 0,65 poisson en 1983 et de 0,72 en 1984.

On estime le nombre total d'heures de pêche pour l'ensemble des pêcheurs qui ont fréquenté le camp, à 11 755 en 1983 et 13 926 en 1984. Le nombre de poissons capturés est évalué à 7 798 en 1983 et 10 355 en 1984.

Mots-clés: journal de pêche sportive; pêche à la ligne; prises/effort; pêche sportive; statistiques de pêche sportive.

INTRODUCTION

During the open water fishing seasons of 1983 and 1984, the Department of Fisheries and Oceans, Central and Arctic Region, undertook a pilot study at Plummer's fishing lodge on Great Slave Lake, N.W.T. to test an angler diary as an alternative to the standard creel census method of collecting angler catch and effort data and to determine which method is more cost effective.

METHODS

The methods used in this study are outlined in detail in Thompson et al. (1988). A diary was given to every guest at the lodge throughout the summer seasons of 1983 and 1984. Those who chose to participate recorded the number of hours spent fishing and the number of fish caught, kept, released and used for shore lunch in their diaries. These data were recorded by specific areas within the part of Great Slave Lake used by the lodge, and by species. The angler diary contained a map showing these areas (See Fig. 1 and Fig. 2). Five areas were used in 1983, but because of the large number of errors associated with recording information by area, the map was simplified to only three areas in 1984.

Two hundred and sixty-eight (63%) and 263 (59%) guests turned in diaries in 1983 and 1984 respectively. However, only 222 in 1983 and 201 in 1984 were filled out completely and could be used for estimating average angler activity and success. The sample data reported in the tables that follow represent the catch and effort of only those respondents who filled out their diaries completely.

A ratio estimator was used to estimate the total catch and effort of all guests at the lodge in each year. This is also described in detail in Thompson et al. (1988).

RESULTS

It was estimated that the 423 guests at Plummer's Great Slave Lake Lodge fished a total of 11 754 hours and caught 7 798 fish. In 1984, there were 446 guests at the lodge and they were estimated to have fished 13 926 hours and to have caught 10 355 fish.

Tables 1 to 14 summarize the data reported in the diaries. Catch data is presented by species and by the number of fish "Kept" to take home, eaten for "Shore Lunch" or "Released". In Tables 5 and 6, catches are separated further into "Targeted Catch" and "Incidental Catch". Numbers shown under the "Incidental Catch" column indicate the number of other species of fish caught while fishing for the "targeted" species. For example, if an angler was fishing for lake trout and caught a northern pike, that northern pike would be shown as an incidental catch. Any lake trout caught would be the targeted catch.

Tables 15 to 18 show the population estimates in detail. Also shown are the 95% confidence intervals associated with the estimated total angler hours and harvests. Nineteen times out of 20 the population value will fall within this interval.

ACKNOWLEDGMENTS

The authors would like to thank D. Topolniski for assisting in the planning and operation of the angler diary pilot study. R. Moshenko and M. Kingsley provided useful comments on this report. B. Quint designed the data entry program used in the study and R. Lypka assisted in the computer programming. In addition, statistical advice was provided by K. Brickley, DFO, Ottawa and L. Neden of the University of Manitoba.

REFERENCES

Thompson, P.C., L.E. Anderson, and H.R. Ellison. 1988. Angler catch and fishing effort diary: 1983 and 1984 pilot study at Plummer's Great Slave Lake Lodge, N.W.T. Can. Tech. Rep. Fish. Aquat. Sci. 1631: v + 27 p.

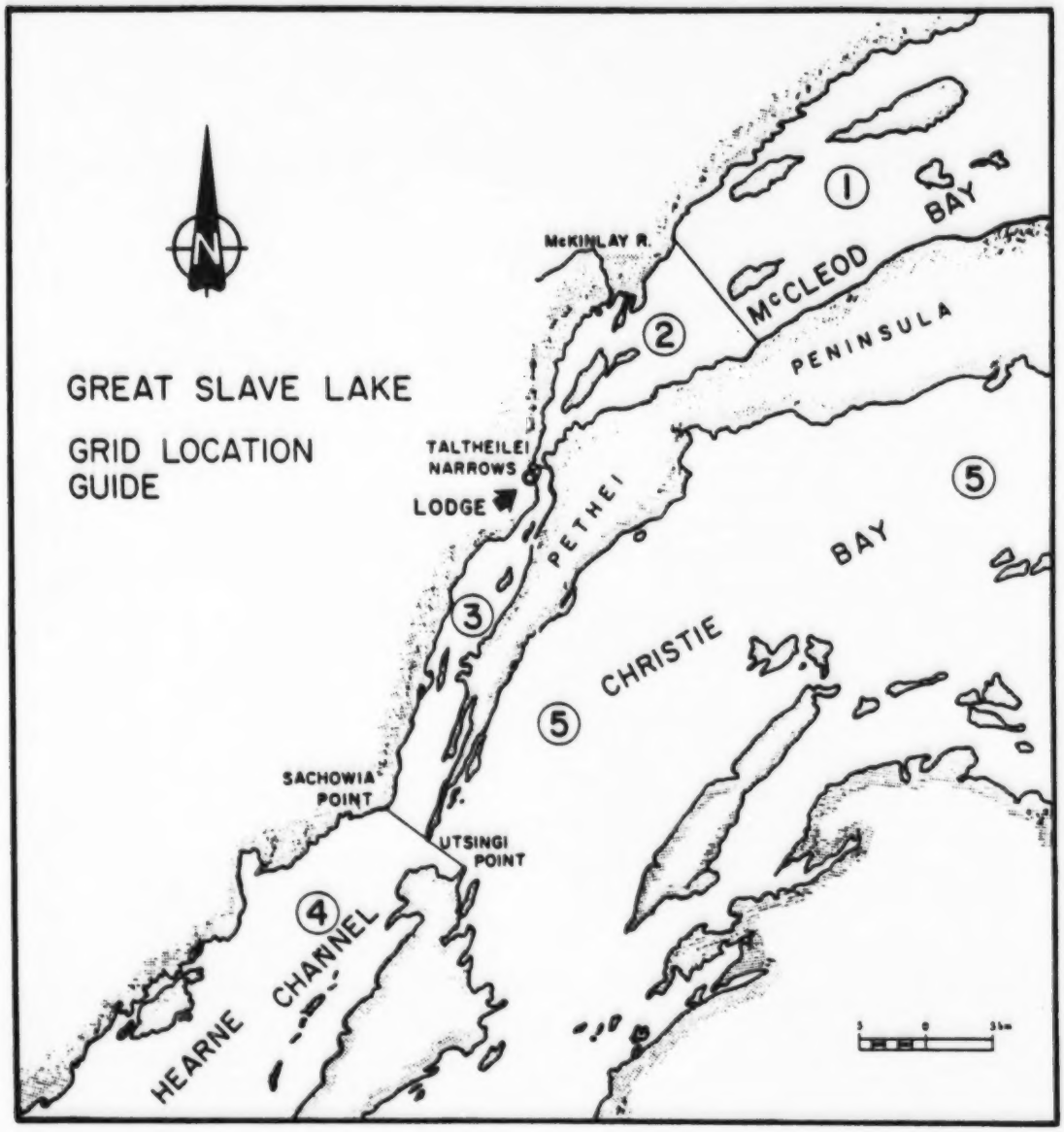

Fig.1 Fishing areas used in 1983.

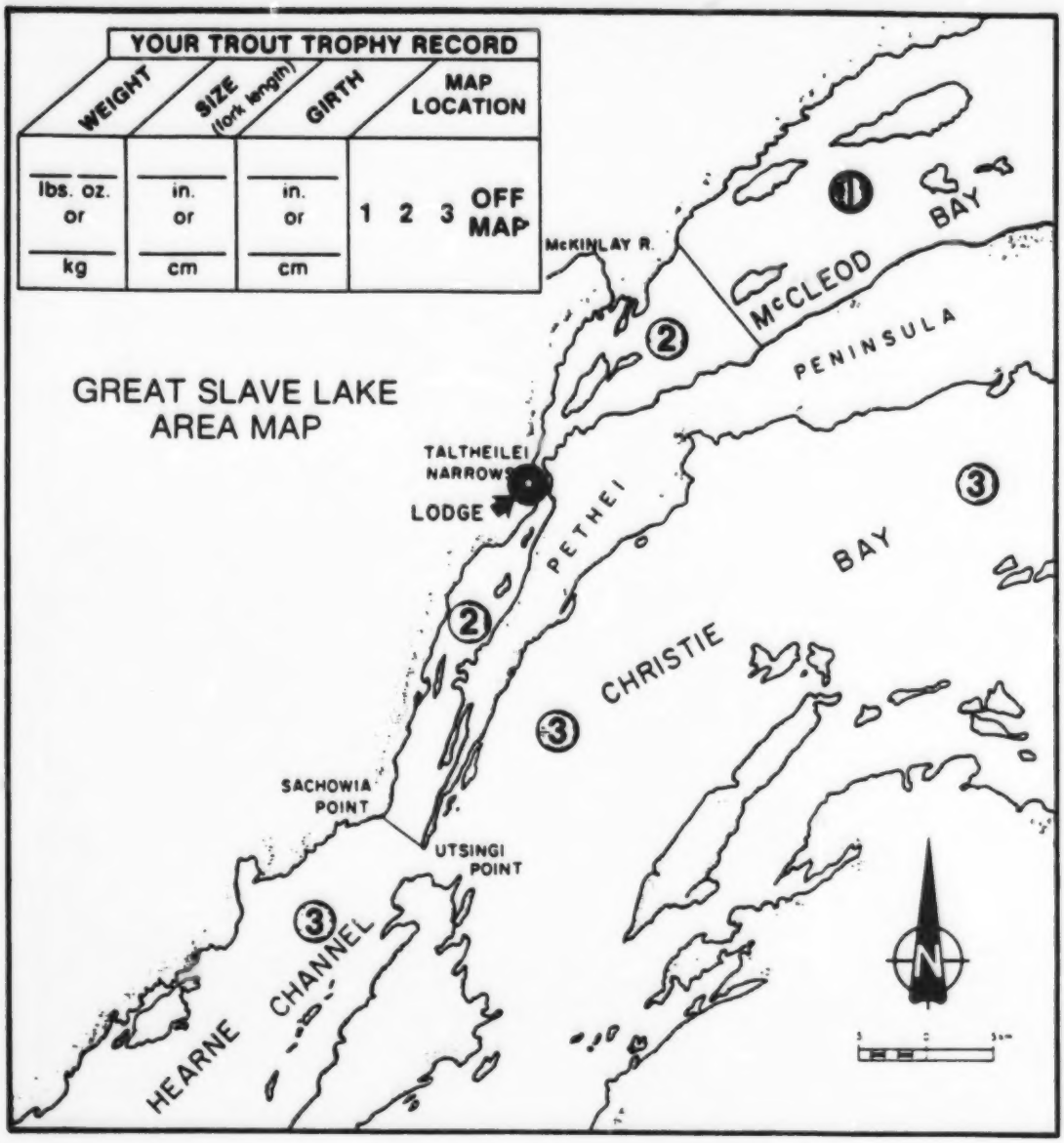

Fig 2. Fishing areas used in 1984.

Table 1. Total sampled angling effort by species, 1983.

Target Species	Number of Anglers	Total Angler Days	Total Angler Hours	Average Days per Angler	Average Hours per Angler	Average Hours per Angler Day
Lake Trout	222	957	5 868.5	4.3	26.4	6.1
Northern Pike	55	55	201.5	1.0	3.7	3.7
Arctic Grayling	74	113	246.8	1.5	3.3	2.2
Other/Unknown	1	2	4.0	2.0	4.0	2.0
Total	222	997	6 320.8	4.5	28.5	6.3

Table 2. Total sampled angling effort by species, 1984.

Target Species	Number of Anglers	Total Angler Days	Total Angler Hours	Average Days per Angler	Average Hours per Angler	Average Hours per Angler Day
Lake Trout	201	904	5 988.6	4.5	29.8	6.6
Northern Pike	15	16	100.0	1.1	6.7	6.3
Arctic Grayling	53	64	199.7	1.2	3.8	3.1
Other/Unknown	16	22	86.3	1.4	5.4	3.9
Total	201	956	6 374.6	4.8	31.7	6.8

Table 3. Total catch of sampled anglers, by species and use, 1983.

Species	Total Catch	Kept	Shore Lunch	Released
Lake Trout	3 453	318	390	2 745
Northern Pike	437	82	18	337
Arctic Grayling	299	147	44	108
Other/Unknown	4	3	0	1
Total	4 193	550	452	3 191

Table 4. Total catch of sampled anglers, by species and use, 1984.

Species	Total Catch	Kept	Shore Lunch	Released
Lake Trout	4 228	319	403	3 506
Northern Pike	196	35	4	157
Arctic Grayling	266	105	34	127
Other/Unknown	50	7	4	39
Total	4 740	466	445	3 829

Table 5. Total targeted catch of sampled anglers, by species and use, 1983.

Targeted Species	Total Targeted Catch	Kept	Shore Lunch	Released	Incidental Catch
Lake Trout	3 416	314	384	2 718	37
Northern Pike	419	73	18	328	18
Arctic Grayling	274	138	40	96	25
Other/Unknown	1	1	0	0	3
Total	4 110	526	442	3 142	83

Table 6. Total targeted catch of sampled anglers, by species and use, 1984.

Targeted Species	Total Targeted Catch	Kept	Shore Lunch	Released	Incidental Catch
Lake Trout	4 182	309	394	3 479	46
Northern Pike	163	28	4	131	33
Arctic Grayling	236	89	33	114	30
Other/Unknown	25	3	3	19	25
Total	4 606	429	434	3 743	134

Table 7. Average catch per day and per hour sampled, by species, 1983.

Target Species	Target Catch per Day	Other Species Caught per Day	Target Catch per Hour	Other Species Caught per Hour
Lake Trout	3.57	0.04	0.58	0.01
Northern Pike	7.62	0.25	2.08	0.07
Arctic Grayling	2.42	0.29	1.11	0.13
Others/Unknown	0.50	0	0.25	0
All Species	4.12	0.08	0.65	0.01

Table 8. Average catch per day and per hour sampled, by species, 1984.

Target Species	Target Catch per Day	Other Species Caught per Day	Target Catch per Hour	Other Species Caught per Hour
Lake Trout	4.63	0.07	0.70	0.01
Northern Pike	10.19	1.38	1.63	0.22
Arctic Grayling	3.68	0.78	1.18	0.25
Others/Unknown	1.14	0	0.29	0
All Species	4.82	0.14	0.72	0.02

Table 9. Fishing effort of sampled anglers by area, 1983.

Area	Hours of Targeted Effort: Lake Trout	Northern Pike	Arctic Grayling	Number of Angler Hours	Number of Angler Days[3]
1	315.5	0.0	9.0	324.5	60
2	1 958.8	0.0	37.4	1 996.2	419
3	2 104.2	5.5	43.5	2 153.2	440
4	380.0	186.0	139.7	706.2[1]	141
5	52.5	8.0	0.0	60.5	18
unknown	1 057.5	2.0	17.2	1 080.2[2]	400
Total	5 868.5	201.5	246.8	6 320.8	997

[1] includes 0.5 hours of effort targeted towards unknown species.
[2] includes 3.5 hours of effort targeted towards unknown species.
[3] anglers commonly fished in more than one area on any given day and consequently the number of days fished per area is a statistic of nebulous value. The total of 997 days represents the number of full days of fishing.

Table 10. Fishing effort of sampled anglers by area, 1984

Area	Hours of Targeted Effort: Lake Trout	Northern Pike	Arctic Grayling	Other/ Unknown	Number of Angler Hours	Number of Angler Days[1]
1	239.0	0.0	6.0	7.0	252.0	50
2	4 719.3	24.0	66.5	59.3	4 869.1	753
3	408.5	46.0	80.0	9.0	543.5	107
unknown	621.8	30.0	47.2	11.0	710.0	325
Total	5 988.6	100.0	199.7	86.3	6 374.6	956

[1] anglers commonly fished in more than one area on any given day and consequently the number of days fished per area is a statistic of nebulous value. The total of 956 days represents the number of full days of fishing.

Table 11. Catches by area, species, and use, 1983.

Species and use	Area					
	1	2	3	4	5	Unknown
Target Lake Trout Catch	240	1 106	1 230	260	37	543
Kept	8	87	113	35	6	65
Released	190	902	980	194	29	423
Shore Lunch	42	117	137	31	2	55
Incidental Lake Trout Catch	0	12	0	25	0	0
Target Northern Pike Catch	0	0	1	394	20	4
Kept	0	0	1	67	5	0
Released	0	0	0	309	15	4
Shore Lunch	0	0	0	18	0	0
Incidental Northern Pike Catch	0	4	3	8	0	3
Target Grayling Catch	5	28	29	198	0	14
Kept	0	13	8	112	0	5
Released	5	13	18	56	0	4
Shore Lunch	0	2	3	30	0	5
Incidental Grayling Catch	4	6	2	10	0	3
Target Other or Unknown Species Catch	0	0	0	1	0	0
Kept	0	0	0	1	0	0
Released	0	0	0	0	0	0
Shore Lunch	0	0	0	0	0	0
Incidental Other or Unknown Species Catch	0	0	1	2	0	0
Total Target Catch	245	1 134	1 260	853	57	561
Kept	8	100	122	215	11	70
Released	195	915	998	559	44	431
Shore Lunch	42	119	140	79	2	60
Total Incidental Catch	4	22	6	45	0	6

Table 12. Catches by area, species, and use, 1984.

Species and use	Area 1	2	3	Unknown
Target Lake Trout Catch	167	3 087	401	527
Kept	14	219	38	38
Released	124	2 576	332	447
Shore Lunch	29	292	31	42
Incidental Lake Trout Catch	4	15	16	11
Target Northern Pike Catch	0	26	103	34
Kept	0	0	25	3
Released	0	26	75	30
Shore Lunch	0	0	3	1
Incidental Northern Pike Catch	2	17	6	8
Target Grayling Catch	2	68	122	44
Kept	0	18	54	17
Released	0	40	54	20
Shore Lunch	2	10	14	7
Incidental Grayling Catch	3	15	6	6
Target Other or Unknown Species Catch	3	21	0	1
Kept	0	2	0	1
Released	1	18	0	0
Shore Lunch	2	1	0	0
Incidental Other or Unknown Species Catch	0	12	0	13
Total Target Catch	172	3 202	626	606
Kept	14	239	117	59
Released	125	2 660	461	497
Shore Lunch	33	303	48	50
Total Incidental Catch	9	59	28	38

Table 13. Average targeted catch per hour by species and area, 1983.

Area	Lake Trout	Northern Pike	Arctic Grayling	All Species
1	0.76	--	0.56	0.75
2	0.56	--	0.75	0.57
3	0.58	0.18	0.67	0.59
4	0.68	2.12	1.42	1.21
5	0.70	2.50	--	0.94
unknown	0.51	2.00	0.81	0.52
All Areas	0.58	2.08	1.11	0.65

Table 14. Average targeted catch per hour by species and area, 1984.

Area	Lake Trout	Northern Pike	Arctic Grayling	Others/ Unknown	All Species
1	0.70	--	0.33	0.43	0.68
2	0.65	1.08	1.02	0.35	0.65
3	0.98	2.24	1.53	0	1.15
unknown	0.85	1.13	0.93	0.09	0.85
All Areas	0.70	1.63	1.18	0.29	0.72

Table 15. Estimated total fishing effort by species, 1983.

Target Species	Estimated Total Angler Days	Estimated Total Angler Hours	95% Confidence Interval
Lake Trout	1 779.7	10 913.4	± 321
Northern Pike	102.3	374.7	± 77
Arctic Grayling	210.1	459.0	± 75
Others/Unknown	3.7	7.4	± 9
All Species	1 854.1	11 754.5	± 321

Table 16. Estimated total fishing effort by species, 1984.

Target Species	Estimated Total Angler Days	Estimated Total Angler Hours	95% Confidence Interval
Lake Trout	1 974.9	13 083.1	± 553
Northern Pike	34.9	218.5	± 91
Arctic Grayling	139.8	436.3	± 93
Others/Unknown	48.1	188.5	± 88
All Species	2 088.5	13 926.4	± 536

Table 17. Estimated total catch by species, 1983.

Species	Total Catch	95% Confidence Interval	Kept	Shore Lunch	Released
Lake Trout	6 421.4	± 372	591.3	725.3	5 104.8
Northern Pike	812.7	± 166	152.5	33.5	626.7
Arctic Grayling	556.0	± 106	273.4	81.8	200.8
Others/Unknown	7.5	± 5	5.6	0	1.9
All Species	7 797.6	± 426	1 022.8	840.6	5 934.2

Table 18. Estimated total catch by species, 1984.

Species	Total Catch	95% Confidence Interval	Kept	Shore Lunch	Released
Lake Trout	9 236.8	± 671	696.9	880.4	7 659.5
Northern Pike	428.2	± 161	76.5	8.7	353.0
Arctic Grayling	581.1	± 161	229.4	74.3	277.4
Others/Unknown	109.2	± 56	15.3	8.7	85.2
All Species	10 355.3	± 702	1 018.1	972.1	8 365.1